

# PATENT SPECIFICATION (11)

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## (54) IMPROVEMENTS RELATING TO SADDLE TREES AND TO SADDLES

- (71) We, WHITE POLYTECHNIQUES LIMITED, a Company registered under the laws of Great Britain, of 2—16 Torrington Place, London, W.C.1, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- This invention relates to saddle trees and is particularly concerned with such trees formed from plastics material and with saddles incorporating such trees.
- Conventionally, saddle trees used as a basis around which a riding saddle is built up are fabricated from several pieces of wood joined and strengthened by metal brackets and frequently covered by a stuck on canvas-like material. Such trees are in a skeleton-like form having a neck portion at the front end with dependent points, the neck being extended rearwardly by two separated strips to form the waist and part of the seat of the tree and the rear ends of the strips being joined together with a member constituting the remainder of the seat and a cantle portion.
- Such a tree bears only general resemblance to the finished shape of a saddle and needs to be built up by the addition of webbing, shaped padding and other material to constitute a preformed shape for receiving a covering of leather and other materials to constitute a finished saddle. The building up operation varies depending upon the particular style of finished saddle required and it is an expensive operation performed by an experienced saddler.
- Some proposals have been made for producing plastics saddle trees, for example from resin moulded glass fibre material but these have generally provided a tree which is a direct substitute for the conventional trees referred to above and still requires the saddlery work referred to for building up into a shape suitable for receiving saddle covering material. British Patent Specification No. 1,245,445 discloses a saddle tree of plastics material moulded so as more closely to conform to the shape of a built up tree but this still requires considerable work before saddle covering material can be fitted. It has also been proposed to injection mould a saddle tree from polypropylene material.
- Another problem that arises with known saddle trees is that they readily break if a horse rolls or falls while wearing a saddle. In view of this and, in particular, with the skeleton like form of tree referred to above, it has been necessary, in order to provide acceptable strength characteristics, to have a tree of considerable weight. The tree together with its shaped padding may weigh several pounds and this inhibits a desired reduction in the overall weight of a finished saddle.
- It is accordingly an object of the present invention to provide an improved saddle tree moulded from plastics material.
- One aspect of the present invention provides a method of making a saddle tree in which a first part of the tree is moulded of substantially rigid plastics material and thereafter a second part of resiliently compressible self-skinning foamed plastics material is bonded to the first part in a second moulding operation in which the first part constitutes part of or an insert in the mould. Preferably the first part is of self-skinning foam plastics material.
- The first part may comprise a neck portion with depending points and the second part may comprise a seat portion rearwardly of the neck portion and a cantle portion rearwardly of the seat portion. Alternatively, the first part may comprise a neck portion with depending points at least one mid-portion rearwardly of the neck portion and a cantle portion rearwardly of said mid-portion.
- Preferably the tree has a seat portion at least part of which is resiliently compressible throughout the thickness of the tree.

The part of the seat portion is advantageously a major part and is surrounded by a framework incorporating a neck portion and a cantle portion said major part of the seat portion extending from the upper to the lower surface of the tree. The neck portion may be joined to the cantle portion by a pair of spaced apart members to define an annular frame surrounding said major part of the seat portion.

Preferably a band of material is incorporated in the second moulding operation the ends of the material extending on each side of the tree to be secured to girth straps. The first part of the tree may also incorporate flexible material such as glass fibre mat.

The first part of the tree may comprise two (or three) rigid elements longitudinally spaced apart and joined by a flexible coupling. The coupling may be one or more hinges or one or more solid or woven steel strips and the elements may be joined just forwardly of the waist of the tree. If desired, the first part may comprise three (or four) elements having a further join between the seats and the cantle.

Such trees are also described and claimed in our copending application 8700/76 (Serial No. 1,439,762).

In this specification the term 'rigid' as applied to plastics material means generally hard but includes the possibility that the material may flex in the manner of a stiff spring.

The above and other aspects of the invention will now be described by way of example with reference to the accompanying drawings in which:—

Figure 1 shows a saddle tree in perspective with a part cut away.

Figure 2 is a side elevational view of the tree of Figure 1.

Figure 3 is an end view of the tree of Figure 1.

Figure 4 is a modified form of the tree of Figure 1.

Figure 5 is an underneath plan view of the tree of Figure 4 incorporating a resiliently compressible material constituting a major part of the seat portion, and

Figure 6 is a plan view of another construction.

Referring to Figures 1 to 3 a saddle tree has a first part indicated generally at 1 moulded from rigid foam polyurethane material in one piece and may incorporate a moulded in front iron 2. The tree at its forward end 3 is of approximately uniform thickness having a raised and curved neck portion 4 extending rearwardly to a waist portion 5 and a seat portion 6. At the rear of the seat portion 6 the tree is curved upwardly to constitute a cantle 7. As shown particularly in Figure 2 the material of the

tree is considerably thickened at 8 towards the rear part of the seat portion and the cantle and on its underneath surface the tree is substantially flattened with a central ventilating groove 10. At its forward end and in conventional manner the tree extends downwardly on each side conforming to the shape of the front iron 2 to provide points 11 and generally flat portions 12 joining the upper ends of the points with the seat portion of the tree.

The upper surface of the part 1 is finished with a moulded recess 13 extending over substantially the whole of the seat portion and upper surface of the cantle portion leaving a narrow rim 15 therearound and the forward part 14 of the recess extends up the waist to the neck but terminates short of the forward end leaving a rim 16.

A cushion 17 (Figure 1) of flexible foam polyurethane material is moulded directly into the recess 13 by placing a suitably shaped half mould (not shown) over the part 1 and injecting the polyurethane material therein to bond directly into the material of the part 1.

Stirrup safety bars may be secured in conventional manner to the tree at the positions marked X in Figure 1. These bars may be rivetted to the front iron 2 and to a suitable rearward extension 17(a) thereof. The stirrup bars may be secured after moulding of the saddle tree or they may be rivetted to the front iron prior to moulding of the part 1 of the tree.

It will be understood that the tree so far described approximates on its upper surface with the shape required for drawing on the finished leather covering of the saddle and so far as its lower surface is concerned needs the addition of rolls of padding 18 (Figure 3) extending along flats 9 and around the rear part of the cantle 7. This padding could at least in part be formed by the same flexible polyurethane material in a moulding process carried out at the same time as formation of the cushion 17 and by using a further half mould on the lower surface of the tree.

As shown in Figure 2 the part 1 of the tree may be formed with a transverse recess or channel 19 to accommodate a strip of webbing 20 which becomes bonded into the flexible material and extends downwardly on each side of the tree to enable girth straps to be secured thereto. The recess 19 also provides a point of weakening in the material of the part 1 which facilitates flexing of the tree at that position. Similar flexing could be achieved by slots such as 21 (Figure 1) extending partially or wholly through the thickness of the material of the part 1. Although the slots have been shown as extending longitudinally of

the tree they could extend transversely thereof and if desired could be formed further towards the rear of the tree.

Figures 4 and 5 show a modified construction in which the part 1 is formed with an aperture 21 extending completely through the material thereof so that the neck and cantle of the part are joined by spaced apart members 22 to provide an annular framework. A recess 23 extends along the upper surface of the neck from the forward end of the aperture 21. At its rear end aperture is bounded by an inclined wall 24 so that the rigid material of the cantle extends to an underneath part 25.

Once the first part 1 has been moulded of rigid material it is then enclosed between two half moulds (not shown) following the outline of both the desired upper and lower surfaces of the tree and a further moulding operation is carried out in which the aperture 21 is filled with flexible self-skinning polyurethane material to provide a resiliently compressible cushion 26 extending completely through the tree from the upper to the lower surface thereof over substantially the whole of the region of the seat portion. The cushion also extends over the members 22 and the upper surface of the cantle to merge with the edges thereof. It also extends along the recess 23 to provide padding towards the front of the tree. On the under surface of the tree the edge of the aperture 21 has been shown by a chain line. In practice, the cushion material merges substantially indistinguishably with the under surface of the rigid part of the tree. It will be understood that by extending the cushion material completely through the tree extra comfort is afforded to a rider. At the same time the lower surface of the members 22, the part 25 of the cantle and the neck of the tree enable a seat cover (not shown) to be stretched over the tree and secured in the conventional manner. Furthermore, having the cushion material extending to the lower surface of the tree enables conventional additional padding (the positions of which are indicated by the position of chain lines 27) to be moulded at the same time on each side of the longitudinal depression 10 across the lower part of the cantle.

The rigid part of the tree can be formed to be very strong so resisting breakage should a horse roll, but by virtue of the members 22 it is particularly flexible. These members are capable of flexing over a distance of several inches to give a "sprung" tree.

If desired, the upper part 28 of the cantle could be formed integrally with the cushioning material. Alternatively the first part could comprise only a neck portion and

points and the second part could include the seat and cantle.

It will be understood that a leather or plastics seat covering could be provided in the final moulding process, together with a cover for the lower part of the tree so obviating a considerable amount of saddlery work in making a finished saddle.

Figure 6 of the drawings shows another arrangement basically similar to Figure 1, but in which the rigid first part of the tree is formed of longitudinally spaced elements 1 (a) and 1 (b) separated at the waist and leaving a gap 29 therebetween. The elements 1 (a) and 1 (b) are formed in a single moulding operation and linked by moulded-in strips 30 of sprung steel strip or woven steel strip constituting a flexible coupling between the elements. The strips are preferably located in the same plane so as to permit ready flexing of the elements. The gap 29 may conveniently be filled by the flexible foam material used for the cushion 17. With this construction the two elements may flex relative to one another through a considerable angle without risk of breaking either element and thereafter returning to its original shape. It will be understood that this construction can be applied to the part 1 of Figures 4 and 5 with the strips 30 extending into the members 22 so providing three elements.

It has been found that when a horse wearing a saddle rolls or falls the tree tends to break at the waist so that the construction of Figure 6 reduces very considerably the risk of such breakage. Moreover, since the whole load of the rider is carried by the forward part 1 (a) of the tree and the latter, via conventional girth straps, is the only part secured to the horse the rear element 1 (b) may readily be arranged to flex as described without inhibiting any conventional riding habits. Although a pair of strips 30 has been described it will be understood that a single central strip could be provided or indeed the parts could be loosely hinged together. Furthermore, since the tree is more liable to flex in one direction than the other the coupling between the parts could be located adjacent a surface thereof and the edges of the gap 29 formed with a generally —V— formation.

Since a saddle tree sometimes breaks at the cantle and also since a rider falling hard on the cantle may sustain injury the cantle may also be formed separately and coupled with the remainder of the saddle tree by flexible couplings at a position indicated generally at 31 so providing three (or four) elements.

In covering a conventional saddle tree with a leather seat the latter is stretched on wet, allowed to dry in order to conform to the shape of the tree then removed to

have skirt portions stitched on and is subsequently replaced on the tree. With a tree according to the present invention the seat, carrying skirt portions, may be cut accurately to shape and bonded directly to the upper surface of the cushion 17 during the moulding operation of the latter. This can be done by preforming leather or plastics material.

It will also be understood that conventional girth straps may be moulded directly into the portions 12 instead of the conventional practice of stitching these to webbing bands. It would also be possible to mould conventional skirts directly into the side edges of the tree.

Although using conventional leather covering for the saddle tree is possible either with hand stitching or moulding as described above it will be understood that the material of the tree lends itself particularly to the use of plastics covering which may readily be finished to provide a leather grained effect indistinguishable from natural leather.

In addition it will be understood that by varying the amount of moulding powder used in the moulding of the basic tree considerable variations of density can be obtained. In practice with comparatively high density material a very rigid tree can be produced weighing several pounds but by using low density material a much more flexible tree weighing only approximately one pound can be moulded. The latter readily permits a finished saddle to be produced having a total weight of about seven pounds.

#### WHAT WE CLAIM IS:—

1. A method of making a saddle tree in which a first part of the tree is moulded of substantially rigid plastics material and thereafter a second part of resiliently compressible self-skinning foamed plastics material is bonded to the first part in a second moulding operation in which the first part constitutes part of or an insert in the mould.

2. A method according to claim 1 in which the first part is of self-skinned foam plastics material.

3. A method according to claim 1 or claim 2 in which the first part is moulded as a neck portion with depending points and the second part is moulded as a seat portion rearwardly of the neck portion and a cantle portion rearwardly of the seat portion.

4. A method according to claim 1 or claim 2 in which the first part is moulded as a neck portion with depending points at least one mid-portion rearwardly of the neck

portion and a cantle portion rearwardly of said mid-portion.

5. A method according to claim 1 or claim 2 in which the tree has a seat portion at least part of which is resiliently compressible throughout the thickness of the tree.

6. A method according to claim 5 in which the part is a major part and is surrounded by a framework incorporating a neck portion and a cantle portion said major part of the seat portion extending from the upper to the lower surface of the tree.

7. A method according to claim 6 in which the neck portion is joined to the cantle portion by a pair of spaced apart members to define an annular frame surrounding said major part of the seat portion.

8. A method according to any one of claims 5 to 7 in which a band of material is incorporated in the second moulding operation the ends of the material extending on each side of the tree to be secured to girth straps.

9. A method according to any one of the preceding claims in which a mat of flexible material such as glass fibre is incorporated in the first part.

10. A method according to any one of the preceding claims in which the first part of the tree comprises two (or three) rigid elements longitudinally spaced apart and joined by a flexible coupling.

11. A method according to claim 10 in which the coupling is one or more hinges or one or more solid or woven steel strips and the elements are joined just forwardly of the waist of the tree.

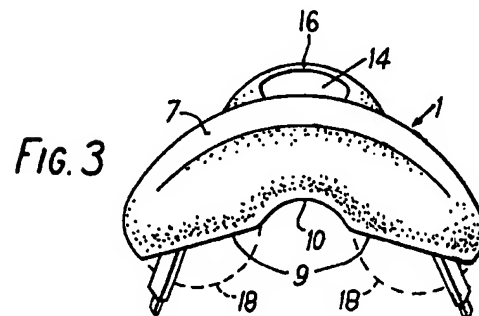
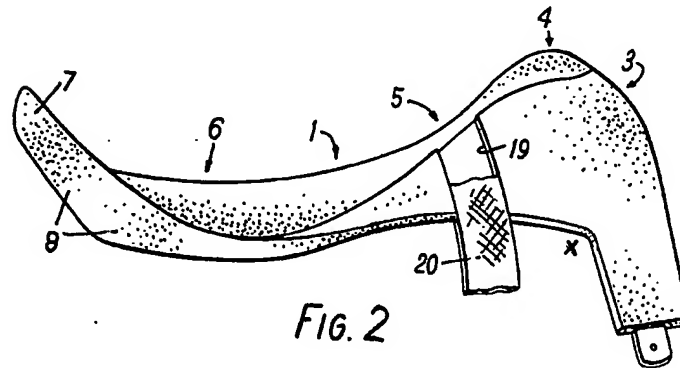
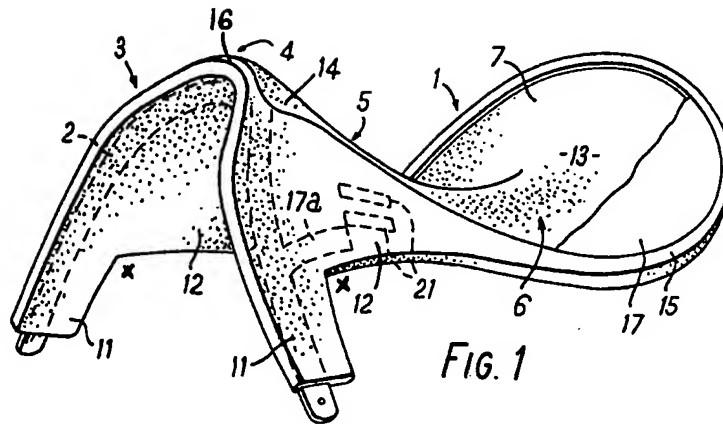
12. A method according to claim 10 or claim 11 in which the first part comprises three (or four) elements having a further join between the seat and the cantle.

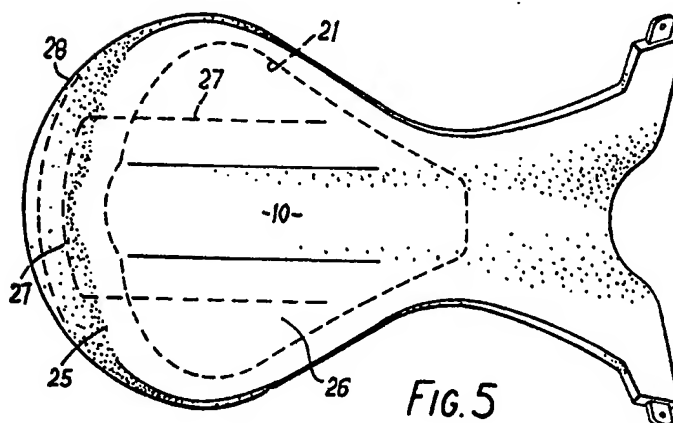
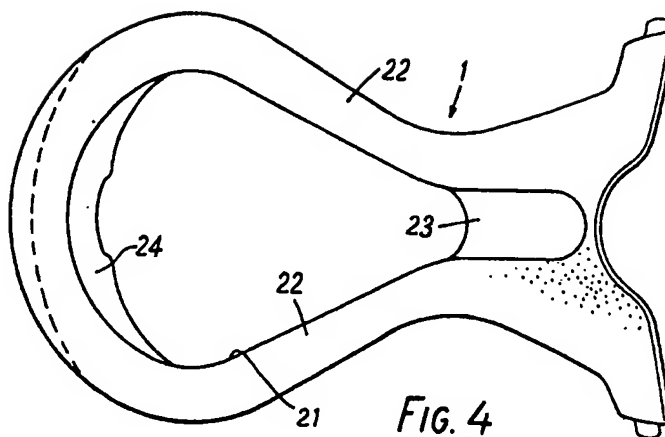
13. A method according to any one of the preceding claims in which bottom padding and skirts are moulded in the second moulding operation to provide a saddle.

14. A method of making a saddle tree substantially as herein described with reference to Figs. 1 to 3 or Figs. 4 and 5 or Fig. 6 of the accompanying drawings.

15. A saddle tree made according to the method of any one of the preceding claims.

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COMPLETE SPECIFICATION

3 SHEETS

This drawing is a reproduction of  
the Original on a reduced scale  
Sheet 3

FIG. 6

